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# HERPETOFAUNA



Gonocephalus godeffroyi (Peters)

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# EDITORIAL

## CAPTIVITY & CONSERVATION

Why do people keep Reptiles and Amphibians at all? Because it interests them to do so, in the same way as people keep fish or, for that matter, a garden. Man has for nearly all of his history kept animals for aesthetic or other non-economic reasons. Its wide-spread, persistent, and popular nature indicates that it has some psychological or emotional value. It must be accepted that reptile keeping has a value other than the purely scientific; that for most people it is just one part of a broader interest in Natural History, which complements rather than conflicts with, an interest in conservation. It is erroneous and mischievous to suggest that one conflicts with the other, and that both are necessarily in opposition to each other. This divisive view is recent and modern; to the older type of naturalist/scientist it did not seem to occur. Several distinguished Naturalists of this century have embodied both interests and it is important that this "all round" attitude is the one that we follow. We would do well to consider the example of fine scientific principles, natural history, conservation and philosophy exemplified by those fathers of ecology, Charles Elton and Aldo Leopold, and more recently, and more specifically in Herpetology, by Archie Carr. Leopold, in his classic journals and essays, saw life in the round. He saw no dichotomy between hunter and conservationist, between dedicated amateur and professional zoologist. In his own life, he was them all. The interest in herpetology is too small for divisions. We must recognise that there is no need for argument, and that animal keeper and "pure" conservationist must work closely together in open and friendly co-operation.

It is important to realise that individuals have as important a part to play as zoos or scientific institutions, because the independent individual is motivated by a strong, original interest often missing in larger organisations. To neglect the importance of the individual would be to waste a great deal of talent and knowledge.

We need to foster a more open and broad-minded attitude than exists at the present. It is pleasant to imagine, for example, easy and friendly co-operation between amateurs, professional scientists, and zoos, all working to help each other in their respective interests, and all managing to find a common ground. Too often, there are artificial barriers between them, and when these arise, it shows that we have failed in following the open co-operative tradition of science and Natural History. All branches of the interest in herpetology need to pool their knowledge and abilities.

(It was considered appropriate to print, as the editorial, part of an article "Captivity & Conservation" published in the British Herpetological Society newsletter of July, 1976).



# THE AGAMID GONOCEPHALUS GODEFFROYI

## IN THE SOLOMON ISLANDS

by M. McCoy, P.O. Box 10, KIRA KIRA, SAN CRISTOBAL, SOLOMON ISLANDS

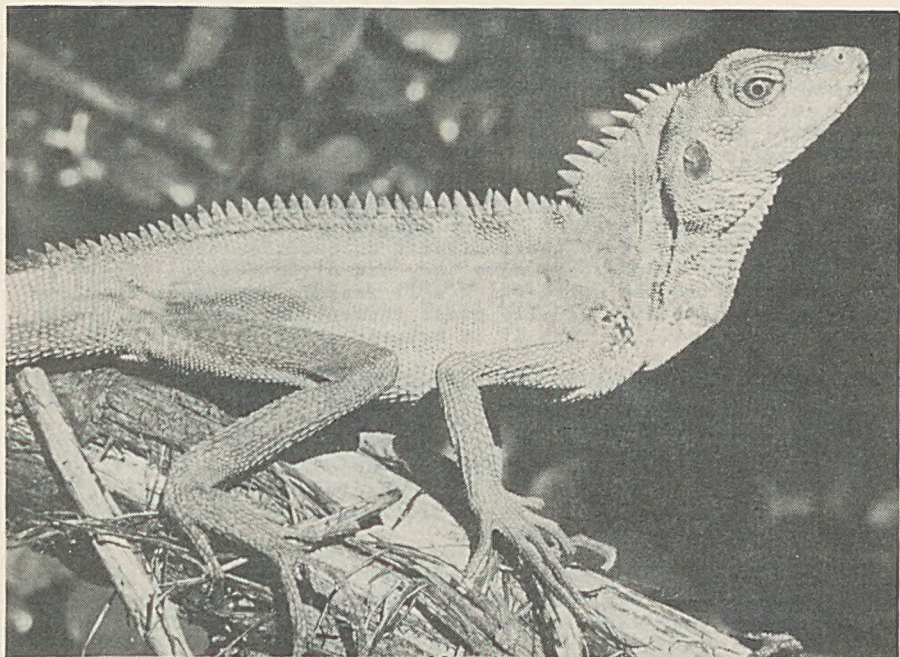
By virtue of living in a house completely surrounded by rain forest on the small island of Malaupaina off the coast of San Cristobal in the Solomon Islands, I have derived much pleasure observing the wildlife that abounds on the island. Brightly-coloured tropical birds and insects are plentiful and many species of reptiles occur here. In particular I have spent many hours watching the lizard, Gonocephalus godeffroyi in the trees surrounding my house. Gonocephalus godeffroyi belongs to the family agamidae or dragon lizards. The type locality for this particular species is Palau in the Caroline Islands in Micronesia. It ranges from these islands, through Papua-New Guinea, supposedly Cape York in Australia and into the Solomons archipelago. In the Solomon Islands it is the sole representative of its family and occurs as relic populations on the islands of Bougainville and Isabel in the western Solomons and in the east it is quite common on the islands of San Cristobal, Santa Ana, Ugi, Olu Malau and Ulawa. On these islands, the arboreal godeffroyi only lives in the forest; they do not enter cleared or cultivated areas. Their foraging range during the day varies considerably from one or two metres above the ground to the tops of the highest forest trees which may be fifty metres or more in height.

Gonocephalus godeffroyi is a rather striking lizard; its arboreal nature is exemplified by various physical characters. In the Solomons, the average snout-vent length is about 120 mm. for males, females are a little smaller. The tail, which is proportionally longer in males, is up to four times the snout-vent length. This long tail acts as a counterbalance to the lizard's body as it moves through the trees. The whole body is very strongly compressed laterally, the limbs are elongated and the digits are strongly clawed. A nuchal, dorsal and caudal crest are present; these are more pronounced in males.

Colouration of the male lizards is quite variable; the ground colour may be light brown to grey to grey-green - this colour is largely dependant upon the lizard's mood and darkens considerably when the animal is alarmed or at night when it is sleeping. In adult males the posterior third of the body and proximal third of the tail are most always a mauve-pink with an opalescent sheen, this colour is especially apparent when the lizard is active during the daytime. The limbs are usually mottled with lighter and darker blotches. The tail of males is always transversely banded with light and dark rings. The females are invariably a bright green, usually without any other markings although there may sometimes be a fine peppering of darker spots on the side of the body. Ventrally they are yellow to yellow-green.

This distinctive sexual dimorphism can be somewhat misleading; female godeffroyi bear a strong resemblance to the New Guinea species, Gonocephalus modestus and it is conceivable that female





Male G. godeffroyi



Female G. godeffroyi



godeffroyi could be mistaken for this latter species in areas where the two are sympatric. The difference between the sexes is not confined to morphological characters; there are noticeable differences in behaviour between male and female. The male agamid is quite active diurnally, continually moving from tree to tree, running out to the end of a branch and leaping into another tree. They do not appear to sun themselves for any length of time as many agamids do. Although they may rest for short periods in patches of sunlight they are also active in shaded areas and will move around during heavy rain. Female godeffroyi on the other hand are much less active. With their cryptic colouration they blend into the foliage and unless they move they are often very difficult to discern. Unlike the males which will rapidly move away from any approach, females will usually press themselves close to a branch, moving around on it so that it is between them and an observer.

Gonocephalus godeffroyi is almost entirely insectivorous although a small amount of vegetable matter is eaten - mostly berries and blossoms. Ants in particular are a major part of their diet. They will often place themselves on a branch where ants are moving and, by using their tongue to lick up the ants, consume a large number in rapid succession. I once observed a female agamid consume several hundred ants over several hours, not moving from the branch on which she was situated.

These agamids rarely come to the ground, when they do it is to forage in the leaf litter for insects. If they are approached while on the ground they will immediately take refuge up the nearest tree.

There does not appear to be a well defined mating season for godeffroyi in the Solomons; I have seen gravid females during most months of the year. Two or three soft-shelled eggs are laid, usually in soft, decaying timber on or above the ground and the young lizards hatch about 8 weeks later. The hatchling lizards are invariably a bright green although even at this age the males can usually be distinguished by their dark transverse body banding.

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## NOTES ON THE BIOLOGY OF THE SKINK

### SPHENOMORPHUS PARDALIS (MACLEAY) INCLUDING

#### A CAPTIVE BREEDING RECORD

by Peter Rankin, 12 Finlays Avenue, EARLWOOD 2206

During May 1974, the author, K. Martin and R. Wells undertook field work centred around Cooktown, Qld. One species of skink which was collected in the area was Sphenomorphus pardalis. Among the specimens collected were two individuals which were retained live by the author for further study. One specimen subsequently reproduced in captivity.

This paper provides information on the habitat of S. pardalis around Cooktown, details observations made upon the captive specimens, and in particular comments upon the observed mode of reproduction.

During the period 15th-17th May 1974, a total of six specimens of this lizard were collected in and around Cooktown. A further three individuals were positively identified but not collected. The skinks were all found beneath rocks or under corrugated iron. The rocks concealing individuals were either not quite flush with the ground or were situated on soft black soil into which the lizards could easily dig. The sheets of iron were all situated in shady sites. In all cases except for the two skinks retained live, they were found singly. The two individuals found together were later determined to be a male and a female.

The habitats in which the specimens were collected varied from a small dense stand of trees and bushes in a gully to open woodland on dry hillslopes. About half of them were located in disturbed habitats within the township of Cooktown. Greer and Parker (1974) and Cogger (1975) record a wide variety of habitats for this species, and both references make mention of the species being found in association with man-made debris.

The two animals retained live were held in Sydney in an aquarium measuring 50cm x 25cm x 30cm and heated from above by a 40 watt light globe. A layer of leaf litter and rotten wood about 5cm deep was placed in the aquarium and several large rocks and a hollow log placed upon this. The substrate was kept constantly damp by frequent spraying with water and a supply of litter dwelling insects was added approximately fortnightly.

After several months the lizards had constructed well used burrows under the rocks and were often seen late in the day lying with their heads protruding from these. From here they would dart out to capture insects which were dropped into the cage. However, this was not the only food gathering technique employed as they were also often seen burrowing through the leaf litter just below the surface and were occasionally observed to capture prey while doing so. This type of behaviour supports Cogger (1975) in his assertion that the species is cryptozoic.

The lizards engaged in a crepuscular daily activity cycle, and were rarely seen basking under the lamp. On the basis of this information, the species can probably best be described as thigmothermic rather than heliothermic (see Heatwole 1976, p.36), although no thermal data is available.

No mating was observed between the two animals, and there was no indication that it had taken place until 26th January 1975 when four live young were found in the cage. The young were born during the period of 17th-25th January, and as no remains of eggshells could be found anywhere in the cage, despite a thorough search, it seems likely that they were born alive. Alternatively, after the young had hatched from the eggs, the remaining shells may have been eaten by one or both adults. However, during the period when the young appeared, the substrate in the cage was very dry and any eggs would probably have desiccated fairly rapidly. The four juveniles measured from 25-26mm SVL, and 34-35mm tail length at birth. They were all coloured the same as the parents. The female measured 67mm SVL after parturition.



The juveniles were housed separately from the adults and were noticeably much less selective in their daily activity patterns than the latter. They could be seen active in the leaf litter at all times of the day, and were frequently observed fighting. This fighting probably led to the eventual deaths of three of the four juveniles which were found heavily scarred and with missing tails. The last juvenile survived for about six months before it too died. Although it had grown considerably by this stage, unfortunately no measurements were taken. The female which gave birth to the young died in June 1975, and is now lodged in the Australian Museum (R 62669). At the time of writing (October 1977) the male is still thriving, 42 months after capture as an adult.

Perhaps the most interesting observation presented above is the fact that the female appeared to give birth to live young. This is in contrast to Greer and Parker (1974) who suggest that the species is oviparous. Their suggestion was based on a gravid female in the Museum of Comparative Zoology, Harvard University, U.S.A. (No. 135392). The specimen was collected on 17th February 1971 at Cooktown, Qld. and was reported by Greer and Parker to contain three shelled oviducal eggs. Fortunately, the author was able to examine this specimen and confirmed Greer and Parker's observation. In addition, two of the eggs were examined internally to determine whether any embryological development had taken place. Both were filled only with yolk, and no embryo was evident. The eggs appeared to be fully developed and ready for laying.

If in fact the MCZ specimen was ready to lay its eggs when it was collected, it would have done so at about the time of the year that the author's juvenile specimens were born. That the eggs contained no visible embryos implies that they would either have been laid and developed for several months before hatching, or alternately would have been retained in the oviduct for several more months before being born. Both of these alternatives are provided on the assumption that the eggs were fertile. A shift in the timing of reproduction from wild to captive conditions may be expected due to modifications in the lizard's environment, but to suggest captivity as the reason for live births, if egg laying is the norm, would imply a very plastic reproductive strategy. If the mode of reproduction is genetically controlled, captive individuals should reproduce in the same manner as wild individuals from the same locality.

It should be pointed out at this stage that the evidence for either form of reproduction presented here is circumstantial, i.e. no actual birth or egg laying was observed in either case. Obviously the anomaly presented needs deeper investigation before further comment can be made. The questions which need to be answered are:

1. What is the true reproductive mode employed by Sphenomorphus pardalis?
2. To what extent is this mode genetically controlled, and what environmental factors influence it, if at all?

In answering these questions, it is probable that we will find that Sphenomorphus pardalis employs either oviparity or viviparity (in its widest sense) as a reproductive mode. It is highly unlikely that both strategies would be exhibited in a single population.



## ACKNOWLEDGEMENTS

The author would like to thank Dr. A. Greer for critically reading the manuscript, and for arranging the loan of the M.C.Z. specimen quoted.

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## SOME NOTES ON TREMATODE INFESTATION IN TIGER SNAKES IN S.A.

by Stephen Giddings, 122 Phillip Highway, Elizabeth South, S.A.

Reptiles have been recorded as hosts to many varied parasites. This article documents Trematode infestation in several Tiger Snakes caught in South Australia, and attempts at ridding them of this parasite.

In March, 1977, the S.A.H.G. held a trip to the Murray Mouth area, concentrating on Narrung, Lake Albert. Among the reptiles caught were two Tiger Snakes (Notechis scutatus). The larger of the two (1.5metres) was melanotic, and was deposited with the S.A. Museum. The smaller (0.6 metres) was a typical banded colour-phase, and was retained by myself. A fortnight later I collected two more Tiger Snakes from this area. The larger was bronze-coloured (0.7 metres) and the other a recently born melanotic phase. These three snakes will hereinafter be referred to as S1, S2 and S3 respectively.

Three months later S1 started to lose condition, and show signs of weakness. It was referred to a veterinary surgeon (Dr. J. Baker), who considered the snake was infested with parasites, and prescribed Piperazine, which is effective against roundworm. The dosage was one teaspoon to a gallon of water, this then being substituted for drinking water. After two weeks there was no improvement, so I tried forcing the solution down the snake's throat, to no avail.

The following day the snake kept opening its mouth, and I noticed little black "grubs" crawling in its throat. The snake was restrained and the "grubs" were removed with tweezers, and sent to the Institute for Medical and Veterinary Science (I.M.V.S.) for identification. Two days later, they informed me that the "grubs" were Trematodes, or flukes, and that sheep drench for liver fluke would be suitable treatment. Unfortunately, this was not readily available, and in my search for it I visited many stock agents, and even the C.S.I.R.O. Several other treatments were suggested, including Ranide (M.S.D.), Nilzan (I.C.I.) and Trodax (May & Baker), but all were unavailable. In the meantime, the first snake had died, and S2 was showing signs of a similar infection.



Further investigation finally brought me to Elders Stock Agency, who recommended and supplied Barbers Pole Sheep Drench. Dr. Baker recommended using this in a dosage of one drop per .454kg weight of reptile. As snake S2 weighed .227kg, it was given two drops of a 1:3 dilution.

Two days later this snake also died. I sent it, and S1, which I had preserved, into the I.M.V.S. for autopsy. This revealed that the "Drench" had killed the snake, but not the flukes. S1 had flukes in most parts of its body including the nasal cavity, throat, stomach, intestines and cloaca.

Mr. Ford, of I.M.V.S., informed me that the flukes were not true liver flukes. They were Dolichoperides macalpinii, family Plagiorchiidae, and were probably carried by watersnails and frogs.

After further consultation with Dr. Baker, I decided to try Thybenzol. Another snake (S4) appearing to be in poor condition was collected from Narrung. It was 1 metre long, bronze coloured with a yellow belly, and had several areas of skin worm infestation. I kept it isolated from my other reptiles, in a glass vivarium. It refused to eat, and appeared near sloughing. Thybenzol was added to the drinking water at a dose of one teaspoon to 4.5 litres of water.

After a week, it successfully sloughed and apparently lost some of its skin worm infestation. However, I had not observed it drinking the Thybenzol treated water, so I forced ten drops of the solution down its throat. Later I found it best to feed the snake first.

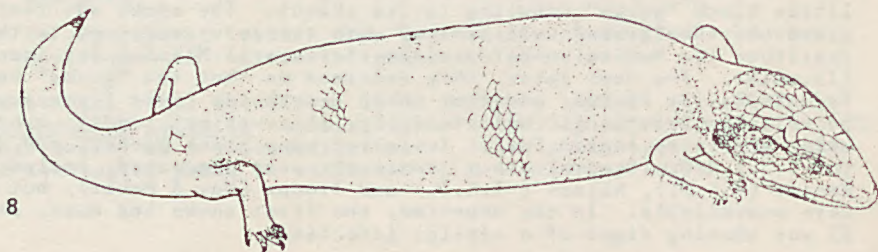
Following this treatment it fed regularly, and two months later I tested for flukes. Previously I had noted that Piperazine brought flukes to the mouth of the snake S1, so I dosed the snake (S4) with Piperazine over a period of a week. No flukes were seen. The snake is still doing well.

I have since observed that many reptiles are parasite infested in the Narrung area. In particular, I have found an undescribed worm infesting Hemiergis peroni, and a 10cm. tapeworm infecting a Chelodina longicollis.

#### ACKNOWLEDGEMENTS:

I am very grateful for the co-operation and assistance shown me by the Institute for Medical and Veterinary Science; and by Dr. John Baker.

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## GUGADJA ABORIGINES AND FROGS

By A.R. Peile, Balgo Mission, via Halls Creek W.A. 6770

Many people regard frogs as ugly, slimy creatures, but this is certainly not the attitude of the Gugadja people who now live at Balgo Mission, situated at the northern fringe of the desert country, 270 km. to the south of Halls Creek in Western Australia. The Gugadja were traditionally centred around the Stansmore Ranges across to the Southesk Tablelands and north to Lake Gregory and should not be confused with the Gugadja of Central Australia. Most of their traditional area is very arid and plant and animal food resources were exploited to the full. Even now with plenty of food available at the Mission the younger as well as the older people seek out and place great value on traditional foods, including frogs.

To the Gugadja some types of frogs represented a plentiful food-supply especially during the Wet Season. Today they are still regarded as a delicacy and the older people who are not working frequently go into the bush in the wet season to dig out frogs from damp watercourses and banks of creeks. During the dry season they go into the sandhill country for the types of frogs to be found there. On Sundays when the children go on a picnic, they spend much of their time digging for frogs. The hind legs are first dislocated with a quick flick of the wrist to prevent them from jumping away. No preparation for cooking is necessary, other than brushing off any sand. The frogs are then thrown on the coals and after a few sizzling moments are joyfully eaten, legs, body, head and all, and the grease-like coating on them after cooking is quite delicious.

Any discussion of the Gugadja knowledge of frogs warrants an examination of the anthropological and ethnological literature about frogs in Australia. Despite recognition of their occasional importance as a water-supply, very little has been recorded about the useage of frogs by the Aborigines. Reim (1962:50) gives the most extensive account, but he merely quotes Spencer and Gillen (1912) and Stirling (1896). Among the food eaten by the Aborigines in Western Australia, Grey (1841:263) lists eleven kinds of frogs but unfortunately does not give their taxonomic or popular names. Berndt (1965:95) merely mentions that the Aborigines "dig for small frogs which have stored water in their bodies during the dry season and are waiting underground for the rains to come again." Meggitt (1962:13) in his catalogue of Walbiri fauna only mentions Chiroleptes sp. (?) as being "squeezed to produce a potable fluid." Laurence (1969) and Sweeney (1947) in their lists of traditional Aboriginal food supplies do not mention frogs at all. Cleland (1966:142) writes that "two species of aestivating frogs, Cyclorana (Chiroleptes) platycephalus Gunther and Notaden bennettii Günther can supply a clean drinkable water which is stored in the urinary bladder." Albrecht mentions that the Central Australian Aborigines know only five varieties of frogs. They find them "in mud about two feet below the surface with a bladder beneath their belly containing a quantity of pure rainwater." (sic!).



Thompson (1973:158) describes frogs as being dug out of moist soil over a metre in depth by the Pintupi in the same way as the Gugadja do. Incidentally the traditional tribal areas of the Gugadja and the Pintupi are adjacent to each other in the desert country. The Gugadja and the Pintupi languages are also very closely related.

Because frogs are regarded as a delicacy, it would be expected that the Gugadja know the different types, where they are to be found, which ones are poisonous and not to be eaten ("rubbish" ones as they say in English) and also which ones contain water. Their knowledge can be illustrated by giving general words and expressions referring to frogs. Some of these expressions are used in a figurative way for people and situations in their appropriate context. In the orthography used for writing Gugadja, the lengthened vowels are represented by repeating the vowel, e.g. "aa" and the retroflex sounds by underlining, e.g. "l, n". The letters, "ng" are used for the voiced velar sound as in the English word, "sing".

The generic word for any frog in Gugadja is purruku or purruk-purrukpa. Both these words are onomatopoeic and are an imitation of the frog's call. The following words are used in Gugadja with reference to frogs:-

pirinpurruku, kuntu-pula-pula ngintikulu - a tadpole with a tail (nginti - tail).

tapunya - round, pursed mouth of a frog

Tjaa - tapunya - tjarra	mutirrpa - n	ngawu
mouth-round, pursed-having	lip-you	bad

wangkinpa - lka	laltu.
talk - on that account	much

- You have a round, pursed mouth like a frog and bad lips, you are talking too much.

lungka-lungka - swollen, lower jaw of a frog

nyila, tjinta - refers to the marbling or irregular patches on the back of a frog.

Tjana	tjinta - kulu	kalantirrpa,	tjana	nyila - kulu.
Back	marbling-with	frog type	back	marbling-with

- The frog (Litoria nasuta Gray) has irregular patches on its back.

manuntjarra, ngamuntjarra - this verb refers to the way a frog appears to roll food around in its mouth, though this movement does have some sexual connotation. This verb is also used with reference to persons and is translated by the word, "chomp".

Yuwa - ni	manmuntjaninpa - ni	lu - n.
give-me	"chomp" - me-ergative	suffix-you

- Give me (some tobacco), you are "chomping" it around in your

mouth. (This may appear unhygienic, but is a common practice to pass chewed tobacco around).

wiilu-wiilu - jumping up and down  
Wiilu-wiilu matjarrpa kalyu - ngka nyimulutima  
jumping up and down entering water-ablative suffix jump

- It is jumping up and down into the water.

lirratjarrpalypa - refers to the shape of a frog's mouth when croaking.

In the following notes I will identify the various frogs the Guga-dja know and detail information they have given me. No attempt is made to give a technical description of the various frogs - for this, the reader is advised to consult Cogger, 1975. When speaking with the people about frogs, I have endeavoured to find out if a particular frog is eaten, if it contains water, when it is to be found and to what kinship group it belongs. This determination of a frog's kinship goes back to the time when each frog was a dream-time hero. The author of this paper has been given tjapaltjarri kinship and so is a brother to many of the frogs which are also tjapaltjarri. The initial consonant "tj" indicates a male, while the initial "n" indicates a female. Many of the frogs have several names and of this multiplicity of names, one woman told me, in another context, "Not like katiya, kutju word." This means: "Not like the whites, they have only one word."

- #1 Crinia remota Tyler and Parker - purrpurpa, katjamarrpa, kunapalalpa. The Gugadja eat this small dirty grey frog which is found in pools during the Wet season. It belongs to the tjungurrayi-nungurrayi kinship class.
- #2 Cyclorana cultripes Parker - putjilpa. They also eat this burrowing frog which is found in soft, wet sand during the Wet season. It belongs to the tjungurrayi-nungurrayi kinship class.
- #3 Cyclorana platycephalus Günther - nyanpu, nganma. During the long dry season, this frog is dug out of sandy country with a digging-stick and the hands, put on hot coals, cooked and eaten. Its water is not squeezed out and drunk. It belongs to the tjapaltjarri kinship class.
- #4 Limnodynastes spenceri Parker - kunanantja, nganmanya. This frog is also eaten and is found in the sandy beds of creeks during the Wet Season. It is eaten by goannas. This frog is also found near the roots of the bat's wing coral or Heilaman tree (Erythrina vespertilio Bentham - kumpupanu). It belongs to the tjapaltjarri-napaltjarri kinship class.
- #5 Litoria caerulea White - yurrka-yurrka, pulpulyu, yurrkiripiri. This green tree frog is not eaten and belongs to the tjapaltjarri-napaltjarri kinship class. It is eaten by goannas and snakes.
- #6 Litoria latopalmata Günther - nganngi, tjawitpa. They eat this



nocturnal frog which lives in holes in trees. Cats go in and get them out. It belongs to the tjapaltjarri-napaltjarri kinship class.

- #7 Litoria nasuta Gray - kalintirra. This nocturnal frog is found in swamps and waterholes during the Wet Season. It is eaten. It goes out from the waterholes during the day and comes home from walkabout at night, when men and women, but not children, can find them. This frog belongs to the tjak-amarra-nakamarra kinship class.
- #8 Litoria rubella Gray - palngawunpa. This brown tree frog, very common during the Wet Season, is regarded as a "rubbish" one or yapunta (literally "orphan"), as the Gugadja call it. It is therefore not eaten. They say it sleeps all the time or as they express it tjunpitipiti tjuranku. This frog is eaten by goannas and cats. It is another tjapiltjarri.
- #9 Neobatrachus centralis Parker - kunapalari, kunakatjarra, nyila-nyila. This frog is found in sandhill country and makes a trilling sound of tjilyilyinama as they say in Gugadja. When put in a fire to cook, "water" squirts out from this frog. This fluid can get in the eyes, making them sore and unable to see. It can also cause sores on the skin. They do not drink the "water" from this frog as it is kumpu - urine. The frog is only eaten as meat. Cook the stomach of this frog very slowly. Turn it over in the fire until it bursts. Then take it out of the fire, let it dry and open out the skin. The skin is not eaten only the "fat" inside. This frog belongs to the tjapaltjarri kinship class.
- #10 Notaden nichollsi Parker - nyilapanta, nganmalya. This burrowing frog is found in sandhill country. To kill this frog they press the top of its neck against the ground with a stick. They cook it in a fire until it opens up, then put it away from the fire to get cold. Then they remove the skin, throw it away and eat the "fat" inside. It is regarded as excellent meat. It belongs to the tjapaltjarri-napaltjarri kinship class.

The frog also plays a role in the mythology of the Gugadja people. This is clear from the fact that every species of frog belongs to a definite kinship class. At Djumundurr, a hill near Darbayi Creek about 15km from Balgo Mission, the Gayidjama frog used to dwell. One middle-aged lady told me about this frog in the following way:-

Tjumunturr -ta	nyinama	purruku	pantanypa
place name-ablative suffix	sit	frog	old female

tjumankani ngayu-pani-ngka.  
dreamtime I - privative suffix - ablative suffix.

- At Djumundurr an old female frog used to dwell in the dreamtime before my time. (cf Berndt, 1972:186).

Tjukurr - tjanu      tingari - lu      mungilpa  
dreamtime-from      hero-ergative suffix      spawn

tjuni - ngka      paltja      kanyininpa  
stomach-ablative suffix      full      keep

wiya      punkanu      paltja - tjuninpa  
not      fall over      full-put

- In the dreamtime the heroes (tingari) kept frog spawn (mungilpa) in their stomachs, as it kept them full and they did not become sick. (lit. fall over).

No account of the Gugadja and frogs would be complete without giving the gesteme (i.e. single meaningful sign) that is used in sign language to convey to a companion that there are frogs suitable for eating in the vicinity without having to yell out to him. This gesteme is not used for frogs that are not eaten. This gesteme is taken from a book in preparation on Gugadja sign language. (Battersby and Peile:#104). The three fingers of one or both hands are extended and curved out with the thumb and the little finger doubled underneath. The hand or hands are then moved upwards and forwards to imitate the jumping motion of a frog. The gesteme itself shows the paws of a frog. (See illustration.) Frogs are important to the Gugadja as a food supply, but not as an emergency water supply as they are for many other tribes. They recognize that the water in the bladder of water-holding frogs is urine and therefore do not drink it. One woman was explaining this to me in Gugadja and then lapsed into English with the words, "jus' selp", in order to stress her point. She meant that the water in the bladder was just there for the frog itself.

The comments about frogs in this paper are translated from descriptions given to me in Gugadja by the people themselves or are from the personal observations of the author. The Gugadja know well the diet of the animals they hunt and it is for this reason I have included above the frogs which cats and goannas eat. Their knowledge of flora and fauna has enabled the Gugadja to live happily in their harsh desert environment over many thousands of years. They have therefore much to teach the "gadiyas" (as the Gugadja call white people). We should be anxious to obtain this knowledge before it is lost in today's rapidly changing conditions where even tribally-orientated Aborigines living in a desert environment are giving up their traditional way of life and are not passing on to the younger generation all their knowledge of flora and fauna. This is fortunately not the case with frogs, the Gugadja children know which ones they can and cannot eat and they do eat them with relish. At times they play with them like live balls, even though some of the white Mission staff may look on in disgust.

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## GESTEME



## BOOK REVIEW: SNAKES OF THE DARWIN AREA

By Graeme F. Gow, Museums and Art Galleries Board of the Northern Territory, P.O. Box 4646, Darwin, N.T., 1977 27 pp., 1 fig., 31 coloured plates. \$3.00

Graeme F. Gow is Curator of Natural Sciences at the Northern Territory Museum in Darwin and is a past curator of reptiles at Sydney's Taronga Park Zoo. He has published a number of popular articles on reptiles, including a volume titled "Snakes of Australia", which was recently reviewed by Webber (1977). Snakes of the Darwin Area is Gow's latest work and forms part of a series of booklets (by various authors) dealing with the natural history of Darwin.

From a production point of view, the cover is perhaps the most spectacular aspect of the booklet, featuring the head of a seemingly enraged Western Brown Snake. The background choice of Central Australian Triodia was poor as it is not known around Darwin. Unfortunately for the author the work suffers from a number of production defects which greatly affect both its appearance and usefulness. The textual matter of 27 numbered pages, is printed in A4 format, on high quality gloss paper; the plates are large and well spaced, apparently intended for identification without the use of detailed colouration and morphometric data. With such a small amount of text, A4 format inflates both the appearance and, one would imagine, the cost. The large size of the booklet definitely negates its value as a durable field manual. The type of paper utilised, though ordinarily excellent for texts, can produce problems with photographic reproduction (in the tropics) unless printing conditions are rigidly controlled, and the coloured plates have suffered various stages of poor registration as a result of expansion of the paper during printing. Some of the plates are so badly affected that it was not possible to determine the snake's FAMILY, let alone the species. This was a pity because the author's original photographs were, in most instances, quite acceptable.

There are few typographical errors and those which do occur are of little significance, with the exception of the disturbing omission of the year of publication (1977), the incomplete scale on the map (10km.), the misplacing of Darwin's position on the same map and mis-spellings of generic names in the captions for plates 16 and 17. The lack of a title page is also decidedly untidy.

The text consists of an introduction, followed by descriptions of each family of snakes occurring in the region, a section on snake-bite, a synopsis of species and a literature list. It is supplemented with one figure and thirty-one coloured plates. The style is easily readable although there are some slight grammatical errors and the occasional tendency to inaccuracies such as the remarks on the Homalopsine snakes being "restricted to the tropical north coast of Australia" (p.5).

In presenting the descriptions he has repeated the major inconsistency of his last publication (Gow 1976) - that of merely mentioning



the Worm Snakes (Typhlopidae) and Sea Snakes (Hydrophiidae) while treating the other families to a species by species analysis. Gow records 7 species of Typhlina from the Darwin region and none are adequately described in the text. The illustration of T. unguirostris (plate 1) is not typical, since the colour in life is brown rather than orange as depicted in the plate. It is surprising that the recently reported (Storr, 1968) T. bramina was not dealt with in detail, for it is now by far the most frequently found Worm Snake in the area. The author's total omission of T. nigroterminata may also be puzzling to some readers, as he has previously recorded it from Howard Springs (Gow, 1977). However it is probable the Howard Springs record is based on T. guenterii, a species often found in the area and one bearing a close similarity in both body form and colour to T. nigroterminata. I was particularly interested in his record of T. towelli (based on the literature ?) for it is believed to be quite rare if it is a valid species.

The traditional subfamilial grouping of the Australian Colubridae (rejected in part by Underwood 1967 and most subsequent authorities) is followed by Gow. In this section the narrative tends to be rather stylised, but informative, containing quite a number of observations not reported in the literature previously - including doubts on the status of Enhydris punctata. His mention of the E. polylepis breeding areas (p.6), tends to create the illusion of aggregative breeding when in fact this does not occur. The illustration of Dendrelaphis punctulatus (plate 2), regardless of reproduction is poor, as is plate 9 - Myron richardsonii. However, it must be pointed out that plate 9 appears to be the only coloured photograph of this species in the literature. Plate 7, "Enhydris punctata" is unfortunately one of at least seven known morphs of Fordonia leucobalia, the most common variation (around Darwin) being that illustrated with plate 8. Indeed, such marked polychromatism as exists in F. leucobalia should have received a better treatment than merely the repetition of his previously published description (Gow 1976).

In his treatment of the Boidae, Gow records 11 species from Australia; Cogger (1975) reported 10. Although I would seriously question the statement that Liasis olivaceus is commonly found around Darwin - particularly the variation depicted in plate 16 - the bulk of the material in this section is good.

With the Elapidae we see a different treatment and the author's interests appear to centre on this group. Species are arranged in two subtle groups, the first dealing with those that are potentially dangerous (in order of likely encounter) and the second encompassing those that are only mildly venomous. Gow's use of Furina christeanus (p.20), now regarded as a synonym of Furina diadema, may tend to confuse some people. The section on the Elapidae, though not free of other minor taxonomic peculiarities, is informatively written and as such could be the best part of the text.

Sea-Snakes, as previously noted, are given only a cursory mention, but the material presented makes interesting, if not humorous reading - particularly the recommendation for divers who may be con-

fronted with a "curious" sea-snake. The inclusion of Emydocephalus annulatus (p.25) in the local fauna was a surprise.

The section on snake-bite First Aid is well organised and should greatly assist treatment. Gow recommends the application of a tourniquet, but a recent report by Sutherland (1976) argues effectively for the use of a broad constrictive bandage. One major problem with this section is the part dealing with symptoms (p.23-4,) where there seems to be an overriding tendency to be pessimistic. The inclusion of possible symptoms resulting from sea-snake envenomation though, is a welcome innovation, one long overdue in popular literature, as it is so difficult to gain ready access to this kind of information.

In conclusion, I think it can be confidently stated that "Snakes of the Darwin Area" represents a scholarly attempt to popularise a regional herpetological study. Unfortunately the intended artistic impact failed as a result of circumstances totally beyond the control of the author. In the event of a second edition, priority should level at production (i.e. printing), the text needs few alterations. Consideration should be given to a reduction in format, say octavo with hard covers; this would increase the durability of the book making it practical for field work - particularly with students in mind. The text would not suffer if a chart, table or key were added, illustrating specific morphometrics in collaboration with a few simple line drawings depicting the characters useful in identification. The inclusion of an illustration of a legless lizard, say Delma borea as this species is frequently mistaken for a snake around Darwin, would be most useful. Even though the cost is high for the size of the publication, at \$3 one would be hardpressed to find as much information packed between similar priced covers. I have no hesitation in recommending the booklet, but would add that few copies are left since only 350 of the original 5,000 were released; the other 4,650 were destroyed at the printers.

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... R. WELLS.

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# NOTES ON THE MAINTENANCE OF A CAPTIVE BREEDING GROUP OF THE GECKO HOPLODACTYLUS PACIFICUS

by R.P.V. Rowlands, 6 Tobruk Crescent, Milford, AUCKLAND 9 N.Z.

## DESCRIPTION

A medium to large Hoplodactylus; snout-vent length 70-75mm in the adult. This species is extremely variable in colour and markings, which normally involve shades of brown, grey, fawn, yellow/orange and black. Some specimens have a lunate patch of mustard-yellow or orange on the nape, or at the base of the tail. H.pacificus is strongly nocturnal in habit.

## RANGE

Northern part of the North Island of New Zealand, extending south to the 40° parallel, including most offshore islands in this region.

## HABITAT

H. pacificus occurs in a wide variety of habitats. By day, individuals shelter in cracks in clay banks, under stones, logs and other debris in the ground in scrub, forest, or on cleared land and also under loose bark or in hollow trees. (Note: the taxonomy of this gecko has been for many years confused with the closely allied H. maculatus. H.pacificus is commonly referred to as "the Hauraki Gulf Gecko" (Sharell 1966), as large colonies occur on islands in that region.

## CAGING

This species has been kept by the author since 1974, in cages measuring 60cm x 60cm x 60cm, constructed of timber on four sides, with a hinged door and a glass panel on the front, and wire gauze on the back. The cages are roofed with iron or fibro, and placed in the open. Typically, one male and up to five females would be kept in such a cage. It is risky to place more than one adult male in the same cage, as fighting is likely to occur with serious injuries resulting. The cages are sometimes shared with other species e.g. H. granulatus.

Cage furnishing consists of soil on the floor, with lumps of clay, rocks, and bark to provide hiding places. Potted plants are also included, on which the geckos climb.

## DIET IN CAPTIVITY

The basic diet consists of flies obtained by using a meat-baited fly trap. Small numbers of moths, caterpillars, beetle larvae and earwigs are used when available to give variety to the diet. In addition, these geckos are particularly fond of sweetened liquid. Honey and water is taken readily, as is blackcurrant juice. To this is added a very small quantity of multivitamin solution, and a calcium supplement in powder form. Drinking water is always available.

## BREEDING

Mating normally occurs from late April to early June, with births occurring in February or March the following year. This species is, like all other New Zealand's endemic geckos, ovoviviparous. Two young are normally produced, although single births occasionally occur.

Birth dates recorded in captivity to date are as follows:

12/2/75, 16/2/75, 19/2/75, 21/2/75, 22/2/75, 24/2/75, 26/2/76,  
1/3/76, 2/3/76, 13/3/76, 24/2/77, 27/2/77, 3/3/77, 24/2/78, 25/2/78,  
28/2/78, 2/3/78.

The young are transferred to a separate cage as soon as possible after birth and provided with copious quantities of fruit flies (*Drosophila*). As with the adults, sweetened liquid and drinking water are provided. After approximately three weeks, larger flies and moths are offered. The feeding with fruit flies is however continued through the winter, until flies and moths become more readily available in the spring (late September or early October). The fruit flies are then discontinued, and the juvenile geckos treated as adults with regard to feeding.

## GENERAL COMMENTS

These geckos have proved to be extremely hardy, and in my experience the survival rate of captive-born specimens is approximately 90%. The young normally take three years to reach maturity. The relative ease with which satisfactory breeding results can be obtained makes this an excellent species for the beginner to keep.

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# OFFICIAL LISTS OF THE COMMON NAMES FOR THE REPTILES AND AMPHIBIANS OF AUSTRALASIA

By Harry Ehmann, C/o Australian Museum, Box A285, SOUTH SYDNEY 2001.  
Peter Heazlewood, 22 Eaton Street, MELTON SOUTH 3338.

Official lists of common names for Australasian reptiles and amphibians have been discussed at various times by Australasian Herpetologists. The Affiliation is ideally situated to compile, ensure agreement on, and to publish such lists.

Common names which are officially recognised and put into widespread use do not change as do scientific names. Official lists of common names will help prevent much of the annoyance and frustration now experienced by laymen and professionals alike when scientific name changes occur.



HOW, in broad terms should the Official Common Names Lists be made up?

There should be Official Names Lists for each country, prepared by the society or societies in that country. Some Societies have already prepared and adopted official common names lists. These lists may require only minor modification for use in the preparation of official lists accepted nationally and internationally. In Australia each society prepares a preliminary list of the common names for all species of reptiles and amphibians which occur in that state. If a species occurs in more than one state then the most frequently proposed common name will be placed on the Official Common Names List. (See later for finer details of "HOW"). In New Zealand the procedure will be much simplified because there is one society and their list will be the final official common names list for New Zealand.

The "author" of the Official Common Names Lists shall be the "A.A. H.S.", that is, they will be a collective effort by all involved herpetologists.

WHEN should the preliminary lists be made up by the Australian Societies?

Bit by bit in convenient lots (e.g. family by family - see below for the recommended order). To ensure the widest possible acceptance each lot should be dealt with and agreed to name by name at general society meetings.

Preparation of each Australian society's preliminary list should become an interesting, lively and important regular part of each meeting for a good few months. The discussion can be accompanied by a presentation of members' slides of those species being dealt with.

The recommended order is -

Boidae  
Colubridae  
Acrochordidae  
Gekkonidae  
Pygopodidae  
Varanidae  
Bufonidae  
Ranidae  
Microhylidae  
Hylidae  
Leptodactylidae  
Crocodiles  
Turtles and Tortoises  
Agamidae  
Scincidae  
Typhlopidae  
Hydrophiidae

### WHICH scientific names need common names?

All from the family names down to those of species and even sub-species. For instance your society may prefer "goannas" to "varanids". Some genera may deserve common names e.g. Ctenotus - the Comb-eared Skinks.

### HOW (in detail), should the preliminary list be made up?

Australian societies should use as the basis for the preparation of their lists "The Reptiles and Amphibians of Australia" by H.G. Cogger. Work through the families in the order set out earlier. On one line first write the scientific name, then the preferred common name and then other non-preferred names (where they exist) as follows:

BUFONIDAE                      Toads

Bufo marinus              Cane Toad              Marine Toad.

If non-preferred names are important in restricted areas, then give the area e.g.

Physignathus lesueurii      Eastern Water Dragon      Goegee (Lismore area  
N.S.W.)

Refer to other publications that use common names (e.g. Worrell, Gow, Swanson, Cogger) and read them out to members before they make a choice.

New common names your society might make up should preferably be descriptive in nature e.g. Lerista - the Sandswimmers, rather than Lerista - Blogg's Skinks.

### WHO will make up these lists?

Each society should appoint one or more members to take charge of the preliminary lists preparations. Ideally the A.A.H.S. Council - or should be responsible but there may be other members who wish to be involved. At each monthly general meeting the responsible member ensures that a manageable number of names is dealt with.

The responsible member should ensure that interested parties in museums, universities and wildlife authorities are consulted. Experts working on particular groups (e.g. Hylidae, Scincidae etc) will also be asked to contribute.

The writers are prepared to be responsible for the assembly of the Australian societies' lists into final Official Common Names Lists. We will need to receive the monthly preliminary lists from each society as they become available. The Official Common Names Lists will be published in Herpetofauna, in convenient manageable parts. The parts may be published in a combined booklet form later.

Working lists of the scientific names of species named or revised after publication of Cogger (e.g. the recently split Bearded Dragon group) will be circulated separately as they are required.



Poorly known genera or species for which suitable descriptive common names cannot be made up at present should be left without a common name for the time being.

#### Updating and adding new common names to the Official Common Names Lists

This will become necessary as new species are found or as poorly known species become better known and are given common names.

New common names that are coined by herpetologists in articles and reports should be based on some descriptive aspect of the living animal e.g., Sandswimmer (behaviour), Whipsnake (elongate shape), Fire-tailed Skink (colour) etc. A brief statement explaining why the common name is chosen is most desirable. Sometimes local common names are appropriate as they are often based on a distinctive feature of the living animal.

Taxonomists describing new reptiles and amphibians are strongly urged to provide a suitable common name.

The Official Common Names Lists will need updating about every five to ten years to add new common names. The scientific names that have been changed in that time would also be changed on the Lists.

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## HISSES AND CROAKS

### THE AFFILIATION:

A very warm welcome to the New Zealand Herpetological Society which joined the Affiliation on 23rd May, 1978!

The Australian Society of Herpetologists was very recently invited to join the Affiliation and they will discuss the matter in August 1978 at their General Meeting near Clare in South Australia.

The four-day Convention at Wilcannia during April was a great success. Sixteen delegates from Adelaide, Melbourne and Sydney discussed many common problems and a very fruitful exchange of ideas occurred. Reptile protection, Herpetofauna and Newsletters, conservation and public education programs for societies, an Australasian herp. keepers manual and Official Lists of Common Names for Australasian Reptiles and Frogs were some of the topics discussed. A detailed report of the proceedings is almost completed for circulation.

The next Convention will be hosted by the Western Herpetology Group in Whyalla between 16th and 19th March, 1979 (Friday to Monday inclusive).

## ADELAIDE:

The first half of 1978 has been very busy for the S.A.H.G. In little over four months, we have had seven official trips, all but one being camping trips. The most important trip was to the west of the State, around Mulgathing, Commonwealth Hill, and Wilgena Stations. Among the 36 species of reptile recorded in six days were Gillen's Goanna (*Varanus gilleni*) and the Thorny Devil (*Moloch horridus*), both rarely seen in S.A., although they are undoubtedly common in their preferred habitats. Other areas visited included the S.E. Flinders, Andamooka Ranges, Murray Mallee, Uno Range, and of course Wilcannia as part of the A.A.H.S. conference. The second half of '78 will be less active, with more day trips and fewer extended trips. The S.A.H.G. hopes to visit Kangaroo Island at Christmas.

Meetings have been well attended and active, with varying formats, from quest speakers, to pickle specimen "key-out" sessions.

Public education displays have been quiet for the first half of '78, but will intensify during the latter half of the year.

The S.A.H.G. trailer, now complete, is proving very useful on extended trips. The projects section has started well, with the study on *Nephrurus* commenced, and studies on *Tympanocryptus*, *Egernia cunninghami*, and the *Sphenomorphus quoyii* group about to commence.

## MELBOURNE:

The V.H.S. Constitution was implemented on the 14/4/78. It was long overdue and now gives the members something to work by. With the new financial year started in June we hope to continue the promotion of the Society and most important, hold the interests of the new and younger members that made our last year so successful. Membership has doubled in the last twelve months and we see no reason why it should not continue. We believe that the "Newsletter" has played a major role in this.

An Institutional Membership has been introduced, and this is available to schools, clubs etc. - fifty Victorian schools have been invited to join to date. The subscription rate has been kept as low as possible as the main aim is to spread the work of the Societies through these institutions, through "Herpetofauna" and the V.H.S. "Newsletters".

Unfortunately, field trips did not play a major role in our last twelve months, for various reasons, including bad weather, but we have planned a comprehensive field program this year.

## NEW ZEALAND

### HISTORY OF THE N.Z.H.S.

The N.Z.H.S. was formed in 1969, and was at that stage based in Wellington. In 1970 an Auckland Branch was formed; then in 1974 an all-Auckland committee was elected to the parent body, necessitating a shift of the Society's Headquarters from Wellington to Auckland - this is the current situation.



At present, evening meetings are held on the first Wednesday of every second month (Feb., April, June, August, October and December) and the Annual General Meeting is held in May. All evening meetings except the A.G.M. are informal, and consist of prepared talks or slide shows, discussions etc.

After an initial period of rapid growth, the N.Z.H.S. membership has consolidated to an average of 80-100 members (present membership stands at just over 100). While the majority of members' interests lie in keeping and breeding geckos and skinks in captivity, there has been of late an encouraging trend towards field studies.

#### Current News

The past 12 months have seen an increase in attendance at meetings, no doubt due in some measure to a revision of meeting format, giving more interesting and informal meetings. Particularly well attended was the meeting held in Hamilton in February; this was the second time such a meeting has been held, and could well be developed into an annual convention.

Plans for the coming year include more talks to interested groups such as schools and clubs, and the organisation of more trips and field study projects for members.

#### SYDNEY:

The June-December agenda has been released and plenty of emphasis has been placed on field trips including a return to the Macquarie Marshes at the end of September to observe post-winter activity of elapid snakes. A trip to the Mount Kosciusko region is planned for November to examine an alpine herpetofauna.

On the subject of field trips a party from the A.H.S. led by Richard Wells is going to New Caledonia for 3 weeks on the 1st January, 1979. They will be collecting herp. specimens for the Australian Museum and as the last publication dealing with the entire herpetofauna of the area was in 1913 the trip should prove very rewarding.

Anyone interested in participating should contact Richard for further details.

Grant Husband and Kim Kennerson are doing a joint study on the longevity of lizards of the family Varanidae and they would like to hear from anyone who can assist with material for the study. They can be contacted through the A.H.S. box number

#### WHYALLA:

A recent acquisition to the Fauna Park's snakes was a captive bred juvenile taipan which is now on display. The care of reptiles at the Whyalla Fauna Park continues to be a major activity for members and the Group is seeking funds to display more lizards and also frogs.

We are continuing our studies of the reptiles on the Sir Joseph Banks Islands and brown snakes on Eyre Peninsula. Present interest centres on the similarity between the juveniles of the different species and subspecies found on the Peninsula.

The A.B.C. film we helped to produce (with local reptiles!) will probably go to air on the 21st or 28th August, so watch for it!

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## A NOTE ON AN AGGREGATION OF DIAMOND PYTHON'S MORELIA S. SPILOTES IN THE GROSE VALLEY N.S.W.

by Paul Webber, The Australian Museum, College Street, Sydney 2000.

Aggregation of numbers of snakes are well known and documented in the United States and has been recorded for a few Australian species: Morelia spilotes variegata, Covacevich and Limpus (1973) Boiga irregularis Covacevich and Limpus (1973), Dendrelaphis punctulatus Kinghorn (1956), McPhee (1959), Demansia psammophis, Covacevich and Limpus (1972), Urochis nigrescens, Covacevich and Limpus (1973) and Hemiaspis signata, McPhee (1959).

To my knowledge this is the first recorded occurrence of such an aggregation occurring in M. s. spilotes.

Mr. R.L. Wilson, a special master at Hurlstone Agricultural High School was supervising groups of students undertaking a bushwalk as part of their Duke of Edinburgh Award in October 1977. Whilst travelling along a track by the Grose River he observed a collection of Diamond Python's (Morelia spilotes spilotes) approximately two metres from the track. The weather at the time was mild and sunny with no wind. Although he moved to within a metre or so of the snakes to photograph them, and subsequently observed them for about ten minutes, the snakes made no attempt to disperse.

The snakes were situated in and around the bole of a dead tree, an apparent sun trap, about 6 metres above, and 10 metres from the edge of the Grose River.

The estimated size of the snakes ranged from 30 cm to 1.2m in length, although from examination of the photograph this appears to be a conservative estimate (a pleasant change from most snake stories!).

It would be presumptuous to try and estimate with any degree of accuracy exactly how many snakes were present, but they seem to have covered an area of some 75 x 75cm in a tight mass of up to two or three bodies in depth, with at least one specimen basking away from this 'knot'. Most of the snakes were typical of the Blue Mountains Diamond python's, being dark green/black with cream/yellow speckling although one (or two?) were predominantly light in colour, more typical of specimens from northern N.S.W.

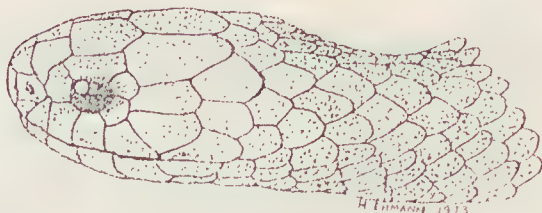


The reason for this aggregation is uncertain, although it seems possible that the dead tree might have been used as an hibernaculum, although conversely, its advantageous aspect as a basking area attracting the snakes solely for thermo-regulatory purposes must not be overlooked. Although mating may have occurred, it is unlikely that this was the main reason for the snakes to congregate as evidenced by the immature specimens present.

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## REPTILES OF THE BALLARAT REGION VICTORIA

by Roy Pailles, MT. EGERTON, VICTORIA

The following is a check list of reptiles observed by the author over a period of ten years within a 40km radius of Ballarat. Lat. 37°34' Long. 143°50'.

#### SNAKES

Copperhead (Austrelaps superba).

Quite plentiful throughout the whole of this area. Very common around Mt. Egerton, Gordon and Bungaree.

White-lipped Snake (Drysdalia coronoides)

Located in the bush areas to the west of Ballarat. Common around Scarsdale and Smythsdale.

Mainland Tiger Snake (*Notechis.s.scutatus*)

Common mainly to the north of Ballarat but also found in scattered pockets to the south.

Eastern Brown Snake (*Pseudonaja textilis*)

Very common to the north of Ballarat and only found around Bacchus Marsh in the south.

Little Whip Snake (*Unechis flagellum*)

Located under granite slabs around Devils Kitchen, Cape Clear and along the banks of Emu Creek.

LEGLESS LIZARDS

(*Delma impar*)

Uncommon, but sometimes found in rocky areas around Lexton and Waubra.

(*Delma inornata*)

Found in rocky areas along the banks of the Moorabool River and also found around Morrisons and Steiglitz.

DRAGONS

Bearded Dragon (*Amphibolurus barbatus*)

Found to the north of Ballarat where it is often seen sitting on the tops of fence posts.

Jacky Lizard (*Amphibolurus muricatus*)

Very common throughout the whole area.

GECKOES

Marbled Gecko (*Phyllodactylus marmoratus*)

Located in the mountain ranges to the north where it is found under bark and slabs of rock.

Eastern Spiny-Tailed Gecko (*Diplodactylus intermedius*)

Encountered in the same habitat and area as the Marbled Gecko, but not as common.

SKINKS

(*Ctenotus robustus*)

I have only found this lizard under rock slabs on Mt. Beeckworth.

Cunninghams Skink (*Egernia cunninghami*)

Located in rocky outcrops, mostly along the banks of creeks. Found throughout the whole area.

Black Rock Skink (*Egernia saxatilis*)

Found in rocky areas to the north but rarely seen.

Tree Skink (*Egernia striolata*)

Found in rocky areas to the north where it is fairly common.



Whites Skink (*Egernia whitii*)

Located under rocks and tree stumps in the gulleys around Mt. Egerton Ballan and Bungai where it is very common.

Bougainvilles Skink (*Lerista bougainvillii*)

Found in the mountain ranges to the north where it is located under leaf mounds and rotten trees.

Common Grass Skink (*Leiopisma guichenoti*)

Very common throughout the whole area.

Weasel Skink (*Leiopisma mustelina*)

Located under slabs of rock around Devils Kitchen and along the banks of Emu Creek.

Blotched Blue-Tongue Lizard (*Tiliqua nigrolutea*)

A very common lizard in this area. Found under sheets of tin most commonly around Mt. Egerton and Gordon.

Eastern Blue-Tongue Lizard (*Tiliqua scincoides*)

Very common throughout the whole of the area.

Shingle-Back (*Trachydosaurus rugosus*)

Found only to the north, around Clunes and Talbot. Uncommon.

MONITORS

Lace Monitor (*Varanus varius*)

Located in the Pyrenees Range which is near Avoca and Lexton. Common in this area only.

TORTOISES

Common Long-Neck Tortoise (*Chelodina longicollis*)

Often found in dams and swamps in the area. Most probably released specimens.

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# NOTES TO CONTRIBUTORS

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